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ABSTRACT

Depressed individuals seem to believe that they are qualitatively inferior; they tend to misinterpret and exaggerate losses and overgeneralize the meaning of self-relevant information. The way in which information about the self is processed by depressed individuals, in particular, the differences in self-schema content (the constellation of attitudes about oneself) between depressed and nondepressed individuals, was studied. Subjects rated a series of personality adjectives, recalled the adjectives, and completed a depressed-versus-nondepressed content rating task and a self-rating task. As predicted, depressed subjects displayed superior recall for self-referenced depressed-content objectives; nondepressed subjects displayed superior recall for self-referenced nondepressed-content adjectives. Study results offer empirical support for the idea that there is a negative self-schema specific to the disorder of depression. (Author/CS)

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The Effects of Depression on Personality Judgments about One's Self and Others

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Currently the most comprehensive account of information processing in depression is the theory and description provided by Aaron Beck (Beck, Rush, Shaw, & Emery, 1979). Beck's theory, based on clinical observations, accounts for the cognitive distortion in depression in terms of the construct of a schema. In this account a schema represents a structural constellation of negative attitudes, which serve as a framework against which depressed individuals perceive and evaluate current information. Reflections about the self tend toward over-control of the environment, where personal responsibility is assumed for a variety of life events. As well, depressed individuals seem to believe themselves to be qualitatively inferior, tending to misinterpret and exaggerate losses, and overgeneralize the meaning of self-relevant information. This negative self-schema would appear to have implications for the manner in which depressives process personal information.

Accordingly, the present experiment was designed specifically to focus on how information about the self is processed by depressed individuals. Addressing questions of content and process regarding the proposed depressive self-schema, this cognitively-oriented approach focused on the nature of memory traces produced by judgments about the self.

The present approach utilizes a social cognition model of the self (Kuiper & Rogers, 1979). In this model, the self is viewed as a cognitive schema (Bartlett, 1932) which is critically involved in the processing of personal and social information about one's self and others. As a schema, the self is defined both in terms of its content and in terms of its function. In terms of content the self-schema represents a hierarchially organized body of knowledge stored in long-term memory. The content of this structure can be described as a list of general and specific terms, characteristic of the individual, which have been "derived from a life-time of experience with personal data" (Rogers, Kuiper, &

Kirker, 1977, p. 677). The general terms are akin to personality traits, whereas the specific terms consist of more situation-specific behavioural exemplars. In terms of function the self-schema is thought to interact with incoming data so as to "organize and guide the processing of self-related information" (Markus, 1977, p. 63). In general, the involvement of this self-schema has been shown to impart both facilitative and biasing effects on the processing of personally relevant information (Lord, 1980).

The evidence in support of self-schema theory has, in part, been derived from experiments utilizing a depth of processing, incidental recall paradigm (Rogers et al., 1977). Within this paradigm subjects are first required to make a series of Yes/No ratings on a set of personal adjectives (shy, friendly). That is, individuals made synonymity or semantic judgments on some words (Does this word mean the same as a given word?), and self-reference (Does this word describe you?) judgments on others. These rating tasks produced memory traces, the strength of which are assessed using an incidental recall task subsequent to the ratings. The Rogers et al. data revealed recall superiority for adjectives rated under the self-referent task. From such data, the authors contend that the self-schema, activated via the self-referent judgment task and accompanying personal adjectives, acts to promote deep and elaborate memory encodings. It is this deep and elaborate encoding, via the self-schema, that is thought to account for the enhanced recall of self-referenced adjectives.

Among the first studies to investigate self-reference in clinically depressed patients was Davis (1979). Using a paradigm similar to that used by Rogers et al. (1977), both clinically depressed and nondepressed subjects were asked to make self-referent (Describes you?) and semantic decisions for 48 normal, non-depressed content adjectives. The results from Davis' study replicated earlier findings of enhanced recall for self-referent decisions in the nondepressed group

of subjects, but not in the clinically depressed group. Based on these data, Davis argued that "a self-schema is not an active agent in the encoding of personal information in depression" and that "depression involved non-schema-based responding" (Davis, 1979, p. 108).

However, an equally plausible interpretation for Davis' findings can be formulated in terms of adjective content. That is, for clinically depressed individuals, given their documented negative self-image, the appropriate test for schema-based processing would be a test using adjectives with depressed content. If content is important, then the nonpathological nature of the target stimuli employed by Davis may have been inappropriate for tapping the potential existence of a depressive self-schema in depressives. Thus, the possibility remains that depressives may have an integrated self-schema, but for different content that nondepressives. By incorporating depressive content in the personal adjectives, evidence for a depressive self-schema may be revealed.

The present study offers a first step toward resolution of the above issue by manipulating the content (Depressed versus Nondepressed) of the personal adjectives presented to Clinically Depressed patients, Nondepressed Psychiatric control patients, and Normal Nondepressed individuals. It employs the individual testing procedure of the depth of processing paradigm (Craik & Tulving, 1975; Rogers et al., 1977, Exp. 2), whereby individuals rated independently normed Depressed and Nondepressed personal adjectives for structural (Small letters?), semantic (Means same as a given word?), and self-referent (Describes you?) attributes. Rating times were monitored for each judgment, with ratings followed by an incidental recall period.

Predictions for incidental recall patterns in this study revolved around a content-specificity hypothesis. If depressives possess an integrated self-schema specific to depressed content, then the usual recall superiority of self-referent encodings (relative to semantic ratings) may obtain only for Depressed content

in Depressed patients. These results could then be interpreted in terms of the existence of a cognitive structure organized for the effective processing of depression-related personal information. This finding would offer strong empirical support for Beck's contention that a negative self-schema exists for depression.

On the other hand, Davis' (1979) conclusion regarding clinical depressives non-self-schema based processing would predict poor self-referent recall (when compared to semantic recall) for both Depressed and Nondepressed adjective content. Normal, nondepressed subjects may only evidence self-referent enhanced recall for Nondepressed content, since Rogers and his colleagues (Rogers et al., 1977; Kuiper & Rogers, 1979) have found a consistent pattern for applicable self-referent words to be better recalled than nonapplicable words.

Recall patterns for the Nondepressed Psychiatric Controls would serve to clarify any obtained differences between Clinical Depressives and Normals. If the Nondepressed Psychiatric sample evidenced the same pattern as Normals, the Depressive findings could be viewed as unique and specific to depression. Conversly, both Clinical Depressives and Nondepressed Psychiatric controls may differ in a similar fashion from Normals. This pattern would suggest the possible existence of a generalized negative self-schema, common across various forms of psychopathology.

One additional aim of the present study was to assess how efficiently depressed and nondepressed personal information is processed by the three groups. While incidental recall may reveal a bias for retention of schema-consistent information for Depressives and Nondepressives, it does not indicate how efficiently this information might have been processed. The assumption underlying a schema interpretation is its assistance and facilitation in the efficient processing of personal information. As such, the amount of time taken for

self-referent personality judgments might be used as an index or measure of processing efficiency. Thus, if Depressives employ a well-organized and efficient self-schema to assist in self-referent judgments, it is predicted that their overall Rating Time (RT) for the Self-referent task would not be significantly longer than Normal Nondepressives. Since it is important that any Rating Time differences in the present experiment not be simply attributed to possible depressive psychomotor retardation (Miller, 1975), a measure of simple RT was also obtained for each subject.

Method

Overview

The study was divided into three major sections. First, sixteen Clinical Depressives, sixteen Normal Nondepressives, and sixteen Nondepressed Psychiatric patients were required to make a series of ratings (Structural, Semantic, Self-referent) on 30 Depressed and 30 Nondepressed content personality adjectives. A cue question, followed by a target adjective, was shown via a two-field tachistoscope. For each question and adjective the subject responded either Yes or No. The Structural, Semantic, and Self-referent rating tasks used, along with their respective cue questions and manipulations, are shown in Table 1. In

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insert Table 1 about here

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the second part of the study three minutes were allowed for the incidental recall of the rated adjectives. Finally, subjects made depressed versus nondepressed content ratings and 9-point self-ratings on the entire set of 60 adjectives, followed by a simple RT task.

Subject Selection

A total of 48 adult females, between the ages of 18 and 65, volunteered to participate in one of three groups: Clinically Depressed, Nondepressed Psychiatric

Control, or Normal Nondepressed. Multiple assessment criteria, including the Beck Depression Inventory (BDI: Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Hamilton Rating Scale for Depression (HRSD: Hamilton, 1960), were used to ensure careful and reliable assignment to groups. The BDI is a 21 item self-report measure of depth or severity of depression (Range 0 to 63), with the internal consistency and validity of this widely used measure reported in Beck & Beaumesderfer (1974). The HRSD is a structured interview which is rated by two trained raters to yield a combined depression score ranging from 0 to 72. Inter-rater agreement for the present study was 98% for within two rating points. The 24 topic areas of the HRSD cover the typical signs and symptoms of depression, including disturbances of affect, sleep, appetite, energy, motivation, and interests, as well as ideations of helplessness, hopelessness, and suicide.

Inclusion in the Clinically Depressed group was based on the following criteria: (a) a BDI score greater than 9, (b) a combined HRSD score of greater than 28, (c) a primary psychiatric diagnosis, as indicated in case files, of unipolar depression, (d) no evidence of psychosis, organicity or addiction, and (e) a self-report of dysphoric mood for at least two weeks (Feighner, Robins, Guze, Woodruff, Winokur, & Munoz, 1972). All depressed subjects were either in- or out-patients in the psychiatric section of a general hospital. Only 4 of the Depressives were receiving anti-depressant medication at the time of testing.

Individuals comprising the Nondepressed Psychiatric and Normal Nondepressed groups were classified as follows: (a) a BDI score of less than 9, (b) a combined HRSD score of less than 28, (c) self-reported absence of dysphoric mood during the previous two weeks, and (d) no evidence of psychosis, organicity, or addiction. In addition the Normal controls (hospital staff and student nurses) were required to have no history of psychiatric/psychological treatment, whereas the Nondepressed Psychiatric controls were currently receiving psychiatric care as either in- or out-patients. The predominant diagnosis in the Psychiatric group was personality

disorder, followed by anxiety and marital dysfunction. None of the psychiatric controls were receiving medication at the time of testing. Finally, the Wechsler Memory Scale (Wechsler, 1958) was administered to all subjects to provide a global level of intellectual functioning, as well as a screen for psychosis or subnormal intelligence. Subjects received no monetary compensation for their participation.

Materials

The final set of stimuli consisted of 60 personal adjectives, differentiated on the basis of depressed versus nondepressed content. This content requirment necessitated an initial independent norming study (Derry & Kuiper, Note 1), in which 72 university students rated a large pool of potentially "depressed" and "nondepressed" adjectives for four attributes: Content (depressed versus nondepressed), Imagery (Paivio, Yuille, & Madigan, 1968), Social Desirability (Jackson, 1967), and Emotionality. Several relevant sources in the personality and depression literatures were consulted to generate the initial pool. Adjectives presumed to be "nondepressed" were obtained from scale descriptions of Jackson's (1967) PRF (see Rogers et al., 1977, p. 680 for greater details), and were viewed as representative of a broad range of normal characteristics. Those assumed to be "depressed" were obtained from (a) Lubin's (1965) Depression Adjective Checklists (Forms A and B), and (b) Beck et al.'s (1979) descriptions of the depressed individual. Ratings were made along 7-point scales, and were presented in random sequences for rating.

In summarizing attributes of the final set of 30 Depressed and 30 Nondepressed adjectives, there was no overlap on the Content ratings for the two types of adjectives, with all Nondepressed adjectives having a rating greater than 4.75, and all Depressed words being rated below 2.85. As well, words were matched on Imagery ratings (ranging in values from 3.5 to 4.7), and were equivalent on word length (number of letters per word) and frequency (Kucera & Francis, 1967). Examples of depressed adjectives are: bleak, dismal, guilty, helpless, and weary. Nondepressed

adjectives included: amiable, curious, loyal, and organized.

Six different orders of word lists were generated to ensure that the adjectives (Depressed and Nondepressed content) were completely counterbalanced across the three types of rating tasks. Thus, within each order of 60 adjectives, 10 Depressed and 10 Nondepressed adjectives received a Structural rating, 10 of each content received a Semantic rating, and a final 10 of each were rated for Self-reference. Moreover, within the Structural and Semantic tasks, the Cue question-Target adjective combinations were generated such that one-half of the ratings would be accorded a Yes response, with the remainder receiving a No response. For the Structural task this involved the systematic variation of upper or lower case type style for adjective presentations (see Table 1). For the Semantic task it was necessary to construct an additional list of synonyms and nonsynonyms to match the target adjectives. Roget's Thesaurus was employed for this purpose, with the consensus of two independent judges determining final word selection. As self-referent judgments could not be anticipated prior to testing, no attempt was made to control for the Yes/No ratings in this condition. In all lists, order of the cue questions was randomly determined in blocks of six trials. Finally, word lists were counterbalanced in their presentation to subjects within each group.

After the recall period, subjects completed a further series of adjective ratings. A self-rating booklet consisting of 4 randomly-ordered pages was used. Each of the 30 Nondepressed and 30 Depressed content adjectives was rated on a 9-point scale, with the following end points: (1) Extremely Unlike Me, and (9) Extremely Like Me. The mid-point of the scale (5) was marked "Moderately Like Me." Content ratings were also made on a separate set of 9-point scales, where subjects were asked to indicate how descriptive each adjective was of someone who is depressed. A rating of 1 represented an adjective highly descriptive of a nondepressed person, whereas a value of 9 described a highly depressed individual. These Content ratings served as a manipulation check on the Content factor.

Procedure

Each subject was tested individually in a small lab room within a hospital setting. The experiment began with administration of (a) the BDI, (b) the HRSD, and (c) the Wechsler Memory Scale. This was followed by ratings of the 60 adjectives on the three tasks presented in Table 1. In this phase, all stimuli were mounted on white 13 x 18 cm. cards, and presented via a Ralph Gerbrands Co. 2-field tachistoscope (Model # T-2B-1). Subjects indicated their rating for each adjective by striking either the Yes or No key on the response panel placed in front of them. The response panel was connected to a Hunter 220C Klockounter timer, which recorded both the subject's response (Yes or No) and Rating Time (in msec.). Including the three buffer items at the beginning and end of the list, there were 66 rating trials. Each of these consisted of (a) a 3-second cue question presentation, (b) a 500 msec. blank interval, (c) presentation of the target adjective, (d) a Yes or No response by the subject, which terminated the visual display, and (e) a 3 to 4 second intertrial interval before the next cue question. After the rating tasks, subjects were provided with 3 minutes to recall, in any order, as many of the target adjectives as possible. The recall phase was followed by completion of the 9-point self-ratings and 9-point content ratings. Finally, a measure of simple RT was obtained. Each subject was instructed to respond as quickly as possible, when an "X" appeared in the visual field of the tachistoscope, by striking the Yes key on the response panel. Subjects were informed their reactions would be timed, and to rest their preferred index finger on a point equidistant from the 2 keys between each of the 10 RT trials. Upon completion of the simple RT task, subjects were thanked for their participation, and fully debriefed.

Results

Group Characteristics

Means for Normals, Nondepressed Psychiatric Controls, and Depressives on the BDI, HRSD, Wechsler Memory Scale, and for age are presented in Table 2. Separate

insert Table 2 about here

analyses of variance for each Depression measure confirmed significant group differences, (F's (2,30) $\geq$ 89.73, p's $<$ .001). For both the BDI and HRSD measures, Clinical Depressives were significantly more depressed than either the Psychiatric Controls or Normals (p's $<$ .01).[1] Further analyses revealed that although the two patient groups did not differ statistically with respect to Wechsler Memory Scale scores, the Normal controls obtained higher scores relative to these two groups (p's $<$ .05). Regarding mean age, it was revealed that both patient groups were older than those in the Normal Nondepressed group (p's $<$ .05).

Content Manipulation and Simple RT Checks

To verify the meaningfulness of the Content manipulation for the present sample, a Content by Groups analysis of variance on the 9-point Content ratings was performed. A sole significant main effect of Content (F (1,45) = 632.91, p $<$ .001: Depressed Content $\bar{X}$ = 7.8, Nondepressed $\bar{X}$ = 2.7) confirmed that all present subjects perceived previously normed Depressed content adjectives as being significantly more depressed than those previously normed as being Nondepressed.

Given this Content difference across all groups, the Clinical Depressives still differed significantly from both groups of Nondepressives on mean 9-point Self-ratings for Depressed and Nondepressed content adjectives. A significant Group by Content interaction for these ratings, (F (2,45) =83.61, p $<$ .001), indicated that Clinical Depressives viewed Depressed content adjectives as being significantly more self-referent (Depressed Group $\bar{X}$ = 5.32; Combined Nondepressed Groups $\bar{X}$ = 2.46) and Nondepressed Content adjectives as being significantly less self-referent than Nondepressives (Depressed Group $\bar{X}$ = 5.91; Combined Nondepressed Groups $\bar{X}$ = 6.99).

A virtually identical pattern emerged for the mean number of Yes responses for the Self-reference Rating Task. Here, subjects could endorse a maximum of 10 Yes responses for each Content condition. A Newman-Keuls analysis of the means comprising this significant Groups by Content interaction, (F (2,45) =

47.87, $p < .001$), revealed that both Nondepressed groups endorsed significantly more Nondepressed than Depressed Content adjectives (Combined Nondepressed Content $\bar{X}$ = 8.03; Combined Depressed Content $\bar{X}$ = 1.54). However, the Depressed subjects made equal numbers of Yes responses to both categories of Content (Nondepressed Content $\bar{X}$ = 5.63; Depressed Content $\bar{X}$ = 5.68). Overall, these analyses indicate the present Content manipulation was meaningful, with Depressives viewing themselves significantly different from Nondepressives.

An analysis of variance of the Simple RT means for the 3 groups revealed a nonsignificant main effect of Groups (F (2,30) = 1.80, ns), with Clinical Depressives ($\bar{X}$ = 695 msec) not responding significantly slower than Nondepressed Psychiatric Controls ($\bar{X}$ = 578 msec) or Normals ($\bar{X}$ = 591 msec). This finding suggests depressive psychomotor retardation is not an issue in interpreting subsequent Rating Time data for the Self-reference task.[2]

Recall Analysis

In scoring recall protocols for each subject, buffers were not included and a proportion correct score was calculated to ensure that differential numbers of Yes and No ratings were not affecting recall scores. This adjusted recall score reflects the general finding that Yes-rated words are better recalled than No-rated words (Craik & Tulving, 1975). The subject-specific proportion score adjusts for different numbers of Yes and No responses. Thus, each subject's recall of Yes-rated words under a given Rating Task, for a given type of Content, was divided by the total number of Yes Ratings for that content and rating task. Consequently, the adjustment represents the proportion of recalled words each person rated Yes, for each Task and type of Content. A similar procedure was used for No-rated words (see Rogers et al., 1977, p. 683-684 for greater detail).

The mean adjusted recall scores are presented in Table 3. An analysis of

insert Table 3 about here

variance of these data demonstrated a significant four-way interaction, (F (4,90) =

8.55, $p < .001$), between Groups, Content, Rating Task, and Rating.[3] In this interaction, Content-specific self-reference enhancement was apparent only for adjectives receiving a Yes rating. Thus, the Depressed group showed recall superiority only for Depressed adjectives receiving a Self-reference Yes rating. A Newman-Keuls post-hoc analysis indicated that this mean was significantly greater than any of the remaining means for the Depressed group (p's $< .05$). Furthermore, within the Depressed Content, Self-reference Yes condition, the Newman-Keuls also showed Depressed group recall was superior to both Nondepressed groups (p's $< .01$). Conversely, and consistent with the content-specificity prediction, the two Nondepressed groups (Normals and Psychiatric Controls) each revealed significantly higher Self-referent Yes recall for Nondepressed Content, when compared to Depressives (p's $< .01$). Means for the two Nondepressed groups in this condition were also significantly greater than any other of the Nondepressed groups means (p's $< .05$). There were no statistically different means when No-rated adjectives were considered. Overall, this pattern replicates the basic depth of processing self-reference effect, and extends it into the population of clinical depressives.

The analysis of variance of this data also revealed a nonsignificant main effect of Groups, (F (2,45) = .16, ns). This failure to register an overall memory deficit for depressives is of some interest, as it seems to argue against any alternative interpretations of the present data based on such factors as greater inattentiveness, reduced motivational levels, and/or cognitive interference for depressives (Miller, 1975).

Rating Time Analysis

Rating Time (RT) was defined as the interval between the initial presentation of the adjective via the tachistoscope until the subject's Yes or No response. Table 4a presents the significant three-way interaction, (F (4,90) = 2.72, $p < .05$), between Groups, Rating Task, and Rating (Yes/No) for these RT data. Table 4b

presents the significant interaction between Groups, Rating (Yes/No) and Content,

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insert Table 4 about here

(F (2,45) = 5.88, $p < .01$). This format reflects the nonsignificant four-way interaction for this RT measure, (F (4,90) = .88, ns). A Newman-Keuls analysis of the RT means contained in Table 4a indicated no statistically significant differences between any Groups for Self-reference judgments that received a Yes rating. Regarding No-ratings, the Depressed subjects were not significantly slower in making Self-reference judgments, relative to Normals. The Psychiatric controls, however, did take longer than Normals to say "No" to self-reference judgments ($p < .01$).

Differences between the content of adjectives appears not to have made a large impact on RTs. A Newman-Keuls analysis of the RT means contained in Table 4b indicated that the only significant RT difference within Groups, as a function of Content, was for the Psychiatric Nondepressed Group. These subjects took longer to say "No to Nondepressed content than Depressed ($p < .05$). Collapsing across content, it appears from Table 4b that Normals may have responded, on the overall average, more quickly than either Psychiatric Group. However, a post-hoc analysis on the significant main effect of Groups, (F (2,45) = 11.89, $p < .001$), indicated that Normals ($\bar{X}$ = 2.033 sec) were only significantly faster than Psychiatric Controls ($\bar{X}$ = 2.888), with Depressives ($\bar{X}$ = 2.568) nonsignificantly different from both groups. In general, these findings indicate Depressives are no less efficient than Normals in processing personal information.

Discussion

The present results provide an empirical basis for generating several theoretical propositions concerning Nondepressives and Depressives processing of personal information via a content-specific self-schema.

Turning first to the Nondepressed groups, the present findings revealed that self-referent enhancement was limited only to Yes-rated Nondepressed adjectives.

This pattern corroborates earlier findings for nonpathological personal adjectives (Rogers et al., 1977), and also offers strong support for the content-specificity hypothesis. Yes-rated nondepressed adjectives appear to form part of the Nondepressive's structural component of self. As such, they facilitate self-reference judgments by providing a reservoir of self-related experience which can be accessed to assist in the interpretation and encoding of any new input. When employed in this fashion, the self-schema imparts a rich and extensive memory trace towards compatible self-related information. This elaborate trace then produces enhanced recall for Nondepressed content.

More generally, the Nondepressed results provide an opportunity to further refine the model which casts the self as a cognitive schema. First, these findings offer yet another demonstration of the important role played by the self-schema in the human information processing sequence. In addition, however, they also specify the exact content conditions under which a self-reference judgment produces enhanced recall. The failure to obtain elevated recall for Depressed Content clearly indicates that the act of making a self-reference judgment alone is insufficient to bolster recall. It is only when this judgment is made in conjunction with the content already embodied in the self-schema that superior recall results. This finding for Nondepressed adjectives highlights the crucial interactive nature of the self-schema, in which the elaboration and increased retention of any new information requires the prior representation of compatible content in the self-schema.

Another major proposition derived from the current data pertains to the potential existence of a self-schema in Depressed individuals. The overall recall pattern for Depressives argues against a non-self-schema interpretation, as advanced by Davis (1979). Instead, the findings suggest that Depressives also employ a self-schema in personal information processing, but one which may differ in terms of content from Nondepressives.

Initial evidence for this proposal emerged from both the 9-point Self-ratings and mean number of Yes endorsements data. For example, both Nondepressed groups endorsed a significantly greater proportion of Nondepressed content adjectives. Also, as expected, the mean number of Yes ratings for Depressed content increased significantly when comparing Depressives to Nondepressives. Of major interest, however, was the finding that this increased Depression Content endorsement for Depressives appears to be at the expense of their Nondepressed content endorsement. Rather than the two types of ratings being independent, there is a negative relationship, with Nondepressed endorsements decreasing significantly in Depressives, relative to the Nondepressed controls. This relationship is such, that in the Depressed group, there is no longer a significant difference between the mean number of Yes responses for Depressed versus Nondepressed content. This finding offers strong empirical support for Beck et al.'s (1979) contention that Depressive content becomes more central in cognitive structures or schemas, as depression level becomes more severe.

Although Depressives displayed equivalent endorsement patterns for both categories of content, they were not recalled with equal ease. The adjusted recall data support the notion that Depressives utilize a negative self-schema for the processing of personal data. This cognitive structure seems selective for depressive information. In short, although appearing to operate in the same facilitative fashion as in Nondepressed Normals, the self in Clinical Depressives is organized primarily for the interpretation and encoding of depressive or negative self-referent material. Convergent support for this content-specificity bias can be found in studies demonstrating greater recall for negative compared to positively toned information in depressives (Lishman, 1972; Nelson & Craighead, 1977).

The pattern of RT results provides critical information bearing on the ease or efficiency with which Depressives process personal information. This is

important, for although the recall data indicated a Depressed content bias, it does not focus on the issue of efficiency. An alternative interpretation for enhanced recall would be that Depressives may have taken a long time to make self-evaluations (i.e., a study time interpretation). This would imply an inefficient form of processing. However, this does not appear to be the case. With no meaningful differences between Depressives and Normals in the time they took to make self-referent decisions, it seems clear that the Depressive's self-schema is organized for the same degree of efficient processing of personal data as witnessed in Normals. The important difference between Depressives and Normals seems clearly to lie in the Content-specificity of their self-schemata, as measured by recall.

Final support for the content-specificity hypothesis resides in the present findings for the Nondepressed Psychiatric Controls. This group showed Recall and Yes-endorsement patterns reflecting Nondepressed schematic content. However, a difference (relative to Normals) was observed in their longer decision times for self-reference judgments. Since the Psychiatric controls did not display a deficit on Simple RTs, this pattern may possibly represent a degree of uncertainty and disorganization concerning one's self-concept (Epstein, 1980; Rosenberg, 1979), related to the forms of psychopathology found within this group. However, this disorganization would appear to be relatively mild, since this group's reduced efficiency in processing was restricted only to Nondepressed No ratings, and did not produce a decrement for Yes-rated self-reference nondepressed recall. Further work is certainly necessary to clarify the above interpretation and findings. Yet, it does suggest an important caveat for researchers, namely, that not all self-schemata necessarily function with equal efficiency. Hence, investigations seeking evidence of schematic processing for personal information need not only evaluate content recall, but also the efficiency of processing, via RT measures.

Drawing conclusions based on fewer variables than this would appear to provide an incomplete perspective on the overall process and content of self.

The present findings appear to hold several relevant implications. The prominence or centrality of Depressed content, specific and unique to the Clinical Depressives, is theoretically consistent with Beck's model of depression. These findings are in contrast to those of Davis (1979), who studied a similar population of clinically depressed patients. Perhaps accounting for Davis' non-schema findings was the failure to appropriately assess the content of the self-schema. Conceptually, it would seem inconsistent that if depressives utilize negative schema-based processing that it would facilitate the same nonpathological content as Nondepressives. This issue highlights the importance of appropriately matching the stimulus materials in a pathological experimental paradigm to the construct under investigation (Kihlstrom & Nashby, 1980).

Further research suggested by the present findings include extensions to a male sample; and a longitudinal study of clinically depressed patients over time, assessing their self-schema during a period of depression, and again when their symptoms are judged improved. This would reveal critical information regarding the stability of the depressive's self-schema. It may be that although the individual is symptom-free, he or she continues to demonstrate evidence of selective processing of depressive personal information. If so, this finding would bear on our understanding of the etiology of this disorder, and its possible prevention.

Another related line of research currently being investigated in our lab (Kuiper & MacDonald, Note 2) concerns interpersonal relations and depression. This work explores cognitive distortions or pecularities in the depressive's evaluations, judgments, and descriptions of others. This research might serve to bridge work on social relationships in depression (Lewinsohn, Mischel, Chaplin & Barton, 1980) with literature suggesting the self-schema may function to organize information about others in memory(Hamiltion, 1980; Kuiper & Rogers, 1979).

Reference Notes

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Footnotes

1. While the Nondepressed Psychiatric group was also found to be significantly more depressed than Normals (p's $< .01$), the former Group's mean Depression scores were still relatively nondepressed (BDI = 5.00; HRSD = 14.50). For example, Loeb, Beck, & Diggory (1971) considered scores of less than 13 on the BDI to be nondepressed. Similarly, Hamilton (1960) found a score of 28 or greater on the HRSD to be indicative of clinical depression. Thus, it appears valid to also consider this group to be nondepressed.
2. A further means of addressing the psychomotor retardation issue is through an analysis of Rating Times for the Structural rating task. In the case of this type of rating, the RT values closely resemble a choice-reaction time format. If depressives were displaying psychomotor retardation, one would expect significantly longer RTs, relative to Nondepressives, on this task. However, a Newman-Keuls analysis on the RT means reported in Table 4a revealed that for both Yes and No rated words, there were no significant RT differences among any of the 3 groups, on the structural task. This finding converges on the conclusion that psychomotor retardation was not a factor in the present sample of Depressives.
3. A four-way analysis of variance was performed on the unadjusted recall data. The same pattern of results emerged as is outlined for the adjusted recall analysis, and hence is not presented.

Table 1

Examples of Rating Tasks and Cue Questions

Task[a]	Cue Question[b]	Manipulation
Structural	Small Letters?	The adjective was presented in either the same type (upper case) as the question, or lower case.
Semantic	Means same as XXXX?	XXXX was either a synonym or unrelated word to the target adjective
Self-reference	Describes You?	Subject responded Yes or No to indicate self-reference quality of the target adjective.

[a] Each subject rated 10 Depressed and 10 Nondepressed adjectives for each task.

[b] All questions were answered Yes or No by subjects.

Table 2

Group Characteristics

Group	BDI[a]	HRSD[b]	Wechsler Memory Scale	Age
Normal Nondepressives	1.50	5.75	117.75	23.00
Nondepressed Psychiatric Controls	5.00	14.50	113.63	31.31
Clinical Depressives	22.13	43.86	110.13	32.13

[a] Beck Depression Inventory, Range 0 to 63, with a score of 13 or above indicating Clinical Depression (Loeb, Beck, & Diggory, 1971).

[b] Hamilton Rating Scale for Depression, Range 0 to 72, with a score of 28 or above indicating clinical depression (Hamilton, 1960)

Table 3

Mean Adjusted Recall for Depressives, Psychiatric Controls, and Normals as a function of Content, Rating (Yes/No) and Rating Task

DEPRESSED CONTENT

	Yes Ratings			No Ratings		
GROUPS	Structural	Semantic	Self-referent	Structural	Semantic	Self-referent
Depressed	.00[a]	.10	.41	.01	.07	.11
Psychiatric Controls	.01	.12	.18	.00	.02	.12
Normals	.01	.05	.08	.01	.04	.07

NONDEPRESSED CONTENT

	Yes Ratings			No Ratings		
GROUPS	Structural	Semantic	Self-referent	Structural	Semantic	Self-referent
Depressed	.07	.05	.16	.02	.07	.15
Psychiatric Controls	.03	.22	.36	.03	.08	.15
Normals	.05	.13	.43	.02	.17	.12

[a]Recall values can range from 0 to 1, with higher numbers denoting greater recall

Table 4

Mean Rating Times (msec.) for Depressives, Psychiatric Controls and Normals as a function of:

(a) Rating (Yes/No) and Rating Task

	Yes Rating			No Rating		
RATING TASK	Depressed	Psychiatric Controls	Normals	Depressed	Psychiatric Controls	Normals
Structural	1.663	2.047	1.360	1.721	1.927	1.357
Semantic	2.352	2.822	2.029	2.553	2.890	1.897
Self-reference	3.770	3.825	3.271	3.478	4.049	2.608

(b) Rating (Yes/No) and Content

	Yes Rating			No Rating		
CONTENT	Depressed	Psychiatric Controls	Normals	Depressed	Psychiatric Controls	Normals
Depressed	2.579	2.907	2.275	2.665	2.764	1.877
Nondepressed	2.611	2.889	2.165	2.503	3.147	2.030